DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/04/2010 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 15, 22, 1-3, 9-10, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608) and Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)).

3. Addressing claims 15 and 22 Packer discloses at least one input interface for electroanatomical 3D mapping data and 3D image data, the 3D image data being high resolution image data (see Fig. 1, col. 2, lines 14-60, col. 3, lines 51-67, col. 5, lines 45-62, Packer discloses a system that perform an imaging method therefore the system must have at least one input interface for electroanatomical 3D mapping data and 3D image data); an extraction module, designed to extract at least significant portions of an area to be treated by segmenting the 3D image data to obtain a 3D surface images of objects in the area which is to be treated to provide selected 3D image data (see Fig. 2A, col. 6, lines 14-45 and col.7, lines 7-23, segmentation is used to extract data); a registration module connected to the extraction module designed for automatic correlation of the electroanatomical 3D mapping data and the selected 3D image data in the correct position and dimension by matching the 3D surface images from the 3D image data to a 3D surface images from the 3D mapping data (see Fig. 1, Fig. 8, col. 2, lines 14-60 and col. 9, line 21-col.10, line 36); a visualization module connected to the registration module to provide the 3D mapping data and the selected 3D image data for visualization in the correct position and dimension (see abstract, Fig. 1, Fig. 8, col. 2, lines 14-60 and col. 9, line 21-col.10, line 36, it would have been obvious to one skill in the art at the time of the invention that the visualization module is connected to the registration module in order to display the image). However, Packer does not explicitly disclose a system that displays multiple images or multiple image data next to one another or side by side, surface profile and surface matching. Leiper discloses a system that displays multiple images side by side on one computer monitor or on multiple

computer monitors so operator can compare the images (see Fig. 4-6 and col. 4 lines 16-27). Rose discloses surface profile provide images of the surface with fine detail (see claim 9 and [0005-0007]). Hemler discloses surface matching (see page 335, last paragraph). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer to have a system that displays multiple images side by side on one computer monitor or on multiple computer monitors, surface profile, surface matching as taught by Leiper, Rose and Hemler because it would be easier for comparing and analyzing images when displaying 3D mapping data and 3D image data side by side on the same monitor or in multiple monitors; the surface profile provide extensive detail about the surface and surface matching is more efficient for matching surface images because this technique does not assume a correspondence between sample points.

4. Addressing claim 1, this method is perform by a device in claim 15. Therefore the method is rejected for the same reason as in claim 15.

5. Addressing claims 2 and 3, Packer discloses the 3D image data of the body region are recorded with a method of at least one of X-ray computer tomography and magnetic resonance tomography (see col. 1, lines 15-35 and col. 3, lines 51-67); the 3D image data of the body region are recorded by using 3D ultrasound method (see col. 1, lines 15-35 and col. 3, lines 51-67).

6. Addressing claims 10 and 14, Packer discloses the 3D image data are visualized via a volume rendering technique (see col. 6, line 1-13); registered 3D image data, real-time 3D mapping data and display a catheter in the selected 3D image data in real-time (see col. 2, lines 15-60 and col. 10, line 14-36).

7. Addressing claims 9 and 18, Hemler discloses correlate the correct position and the correct dimension using distinct anatomical points identifiable in 3D image data and in the 3D mapping data as an effective way to ensure the images on display are in correct position and dimension (see page 335, last paragraph, page 337, line 7- page 338, line 32).

8. Claims 17, 21 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)) and Williams et al. (DE 19953308-A1).

9. Addressing claims 17 and 21, Packer, Leiper, Rose and Hemler do not disclose correlate the correct position and the correct dimension using artificial marker. Williams discloses correlate the correct position and the correct dimension using artificial marker identifiable in 3D image data and in the 3D mapping data as an effective way to ensure the images on display are in correct position and dimension (see abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify

Packer's system to correlate the correct position and the correct dimension using artificial marker taught by Williams because using artificial markers is an effective way to ensure the images display are in correct position and dimension.

10. Addressing claim 6, the method is perform by a device in claim 21. Therefore the method is rejected for the same reason as in claim 21.

11. Claims 23 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)) and Hughes et al. (US 7,233,340).

12. Addressing claim 23, Packer, Leiper, Rose and Hemler do not disclose linking two visualizations together so that when user rotates, moves or scales one of the visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling. Hughes discloses a visualization module for linking two visualizations together so that when user rotates, moves or scales one of the visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling therefore the two visualizations would have the same position and dimemsion (see col. 11, lines 12-59). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer's system to link the two visualizations together so that when user rotates, moves or scales one of the

visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling taught by Hughes because by linking two visualizations together so that when user rotates, moves or scales one of the visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling therefore the two visualizations would have the same position and dimension.

13. Addressing claim 13, this method is perform by a device in claim 23. Therefore the method is rejected for the same reason as in claim 23.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)) and Schweikard et al. (US 6,144,875).

15. Addressing claim 8, Packer, Leiper, Rose, Hemler do not disclose an artificial marker attach to the patient's thorax. Schweikard discloses an artificial marker attaches to the patient's thorax to measure breathing and heart beat (see col. 7, lines 14-32). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer's method to attach a marker to the patient's chest taught by Schweikard because breathing and heartbeat can be measure by attaching a marker to the chest.

16. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002), and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)) and Krishnan (US 6,771,262).

17. Addressing claim 11, Packer, Leiper, Rose and Hemler do not disclose an adjustable volume rendering transfer function. Krishnan discloses using an adjustable volume rendering transfer function to specify boundary condition to improve image quality (see col. 7, line 64-col.8, line 5). It would have been obvious to one skill in the art at the time of the invention to modify Packer's method by using an adjustable volume rendering transfer function because adjustable volume rendering transfer function would specify boundary condition and improve image quality.

18. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)) and Massaro et al. (US 2002/0087329).

19. Addressing claim 12, Packer, Leiper, Rose and Hemler do not disclose visualized image data on a polygonal grid. Massaro discloses visualize image on a polygonal grid for easily matching location and determine distance (see claim 58). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer's

method to visualized image data on a polygonal grid taught by Massaro because polygonal grid allow the viewer to easily match location and determine distance.

Response to Arguments

Applicant's arguments filed 01/04/2010 have been fully considered but they are not persuasive. Applicant argues new limitation “3D image data being high resolution image data” is not disclosed by the references. This limitation is disclosed by Packer in one of the embodiments at col. 5, lines 45-62.

Addressing claim 6, applicant argues the references do not disclose multi-stages of registration. Hemler discloses two stages of registration on page 335, last paragraph and page 337, line 7- page 338, line 32). The first stage is automatically identify 3-D surfaces of similar anatomical structures in each images set. This is the same as correlation with the correct position and dimension using distinctive points which can be identified in both set of images because similar anatomical structures are the distinctive points and similar anatomical structures have similar positions and dimensions. The second stage is surface matching therefore Packer in view of Hemler and William discloses all claim limitations in claim 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIEN NGUYEN whose telephone number is (571)270-7031. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. N./
Examiner, Art Unit 3768

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768